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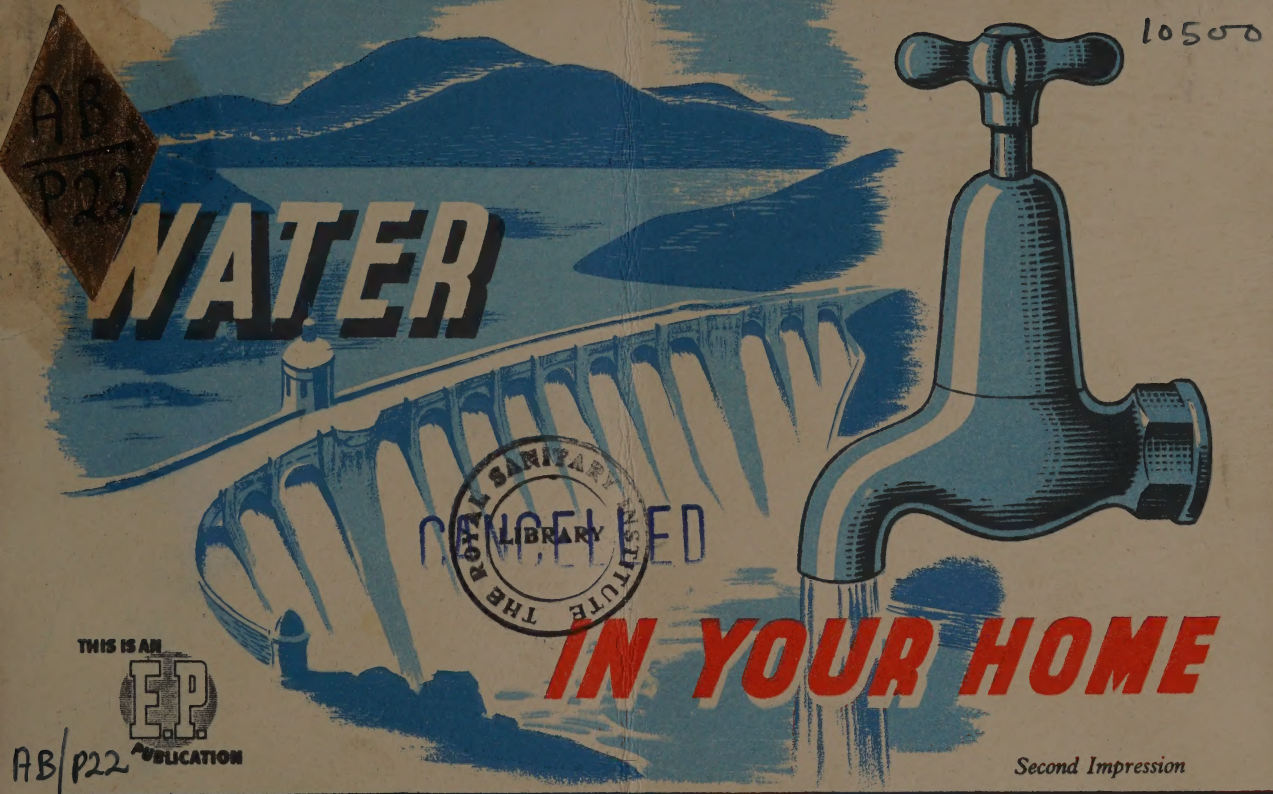
WATER



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"CARE OF YOUR HOUSE" SERIES No. 1

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THIS IS No. 1 IN **"THE HOME"** SERIES

This visual booklet forms part of

THE COMPLETE VISUAL UNIT

presenting each subject by means of

WALL PANELS • FILM STRIPS

LECTURE NOTES • FILMS • MODELS

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Water IN YOUR HOME

FOREWORD

The purpose of this booklet, and of the other visual aids which accompany it, is to tell you of one of man's most essential needs—water. It shows how water is brought into your house, how your water system and appliances work, and how to look after them properly.

An adequate supply of clean, pure water is necessary for each one of us and it is essential that we all know how to use it, how to conserve it, and how to keep an efficient supply in our own homes.

The British Waterworks Association feels that this booklet should have a wide appeal and serve a valuable purpose in increasing that co-operation between your Waterworks Authority as supplier, and you, as a consumer, which makes an efficient service possible.

Geoffrey Hutchinson, PRESIDENT

British Waterworks Association

Water IN YOUR HOME

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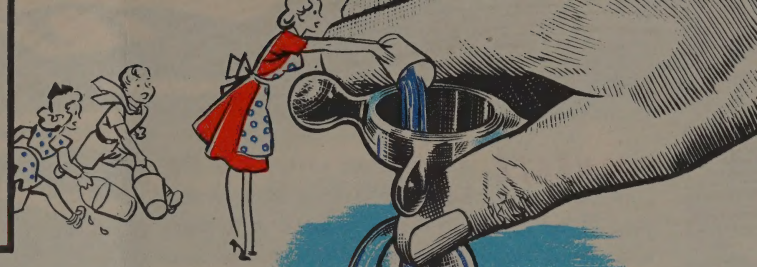
CHAPTER 1 — YOUR WATER SUPPLY
CHAPTER 2 — WATER IN YOUR HOME
CHAPTER 3 — TAPS, VALVES AND CISTERNS
CHAPTER 4 — TRAPS AND WASTE PIPES
CHAPTER 5 — WHEN WINTER COMES—!
CHAPTER 6 — WASTE NOT—!

CHAPTER ONE

Your Water Supply



Water Supply may be conveniently dealt with under two headings :—

1 The external supply to the house :—

By law, water authorities are required to provide a supply of pure and wholesome water.

That is, water free from

—visible suspended matter

—odour and taste

—all bacteria which are likely to cause disease

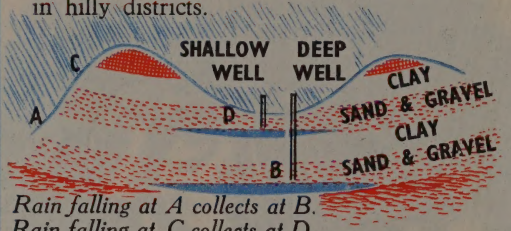
—any mineral matter injurious to health.

2 The distribution within the house for—

It's up to you to know how your plumbing system works and to see that your appliances work efficiently.

When you turn that tap do you ever stop to think of the labour and expense required to bring water into your home ?

RAINFALL is the primary source of all our supplies and is collected in various ways. Some runs along the earth's surface forming streams and rivers which eventually reach the sea. These streams can be dammed to form **RESERVOIRS** which are usually found in hilly districts.

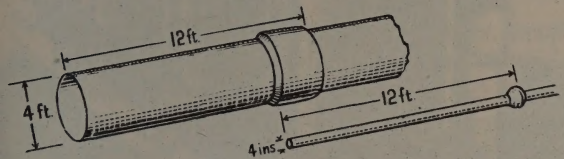


Rain falling at A collects at B.
Rain falling at C collects at D.

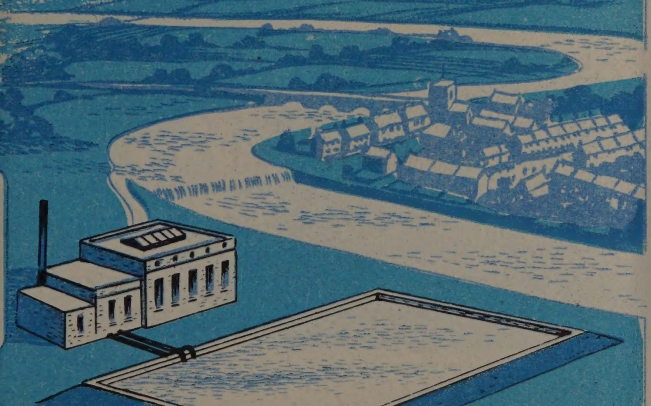
Some of the rainwater soaks into the earth until it reaches a layer of rock or clay through which it cannot pass. Here it collects and forms underground lakes which can be tapped by sinking **WELLS.** Water can be pumped from these by hand, as in small villages, or by mechanical means, as in London, where quite a lot of the supply comes from wells.

Water may be pumped direct from **RIVER,** but this requires careful treatment before use.

Reservoirs are often in the hills far away from the towns and the water is conveyed through large pipes to smaller "service" reservoirs near at hand.



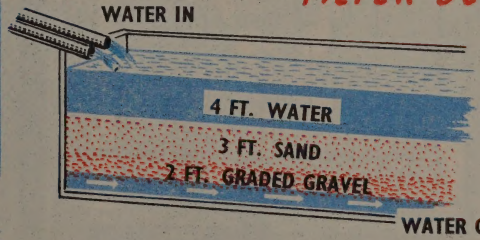
Piping 48" diameter may cost £40,000 per mile.
Piping 4" diameter may cost £2,000 per mile.
(1948 prices)



To give the necessary pressure to force the water through the pipes and out of the taps, it is sometimes pumped into tanks on the top of –

WATER TOWERS

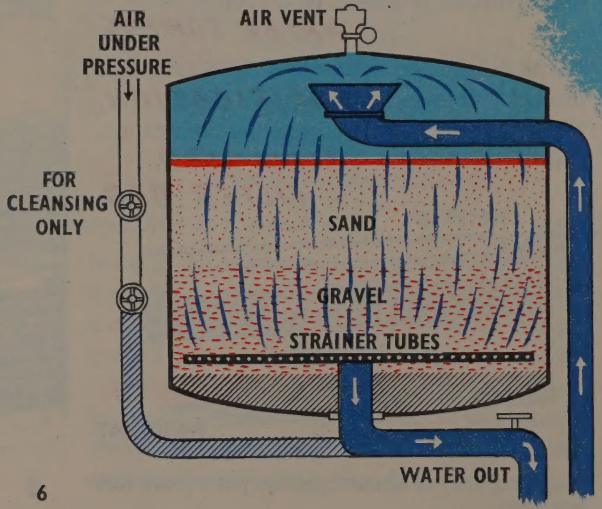
Before distribution to the town, the water passes through filters for **PURIFICATION,** where all suspended impurities are strained out. This is often done by a **SLOW SAND FILTER BED.**

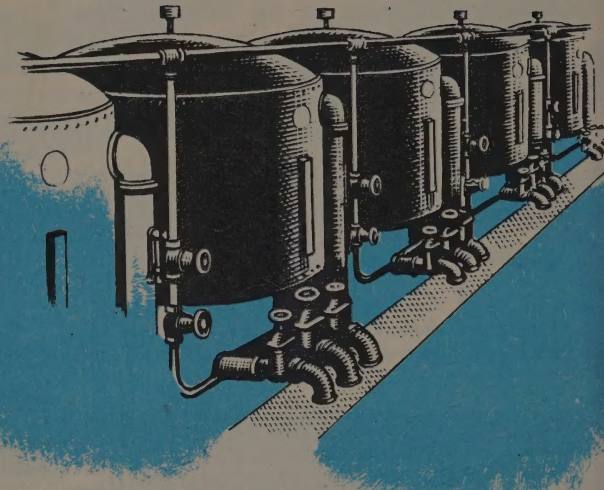


Has a capacity of about 3 gallons per square foot per hour.

SOLID IMPURITIES

As well as using the slow sand filter bed some water authorities use ***PRESSURE FILTERS*** which are constructed in cylindrical tanks. The water is forced in at the top under pressure, and passes through the sand and out through strainer tubes at the bottom.



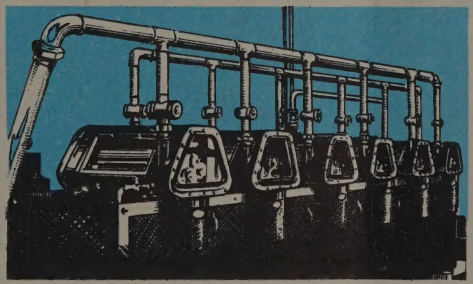


A layer of impurities collects on the top of the sand, and to ensure that these do not mix with the sand, aluminium sulphate is added to the water before it enters the filter. This causes ***COAGULATION*** of the impurities which form into a jelly-like substance on top of the sand. When the filter requires cleaning, the water is turned off and compressed air is forced through the sides and centre of the sand bed. This breaks up the layer of impurities which is then washed out by reversing the flow of water.

BACTERIA

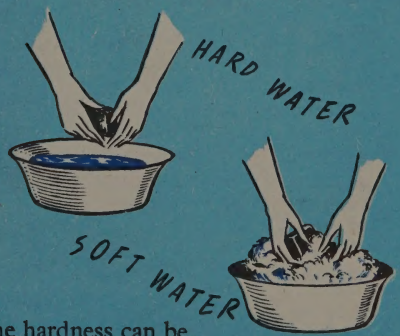
All water authorities ensure that the water supplied is free from typhoid or other water-borne bacteria. In the majority of cases this is done by ***CHLORINATION*** —adding chlorine to the water. The normal proportion is about 1 part in 2,000,000, but this depends on the source of supply and the prevailing conditions—during the war it was increased to reduce the danger of infection from bomb-damaged sewers, etc.

In a few cases the water is treated with ***OZONE*** instead of chlorine, this produces a sparkling and very palatable water. The ozone is produced by passing high-voltage electricity through dried air, and it is then bubbled through the water.



HARDNESS

After this treatment, the water may still have certain salts dissolved in it. Some of these—certain sulphates and bicarbonates—react with soap and make it difficult to form a lather. This is because some of the fatty acid in the soap—which normally forms the lather—is used up in changing these dissolved salts into insoluble salts in the form of "scum."



* The hardness can be ***TEMPORARY*** OR ***PERMANENT***

TEMPORARY HARDNESS

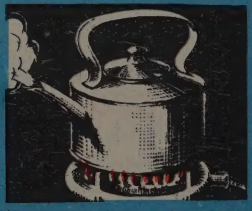
- Is caused by the presence of bicarbonates.
- Is sometimes removed by the water authorities before it is supplied to the consumer. This is done by adding the correct amount of lime to the water, either before or after filtering, or by base exchange
- Can be removed by boiling—this decomposes the bicarbonates into carbon dioxide (which is driven off as a gas) and calcium carbonate which is deposited as "fur."

TO 'DE-FUR' YOUR KETTLE

Since "fur" is a poor conductor of heat, its presence in a kettle or pan means that a greater amount of outside heat is necessary to boil the water. It should be removed regularly to prevent waste of heat.

Half fill with water. Add two tablespoonsful of vinegar to each pint and leave for four hours.

Empty the kettle and tap out the "fur."



Refill, boil up, and empty again, then rinse well. Repeat as necessary.

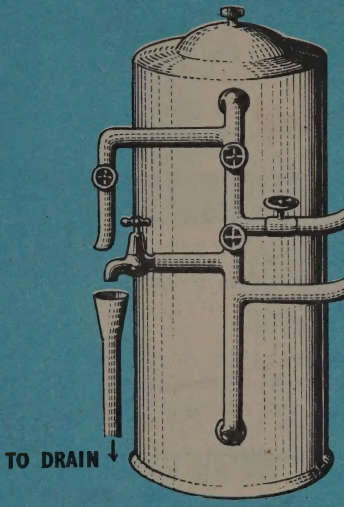
PERMANENT HARDNESS

- Is chiefly due to the presence of calcium and magnesium sulphates.
- Cannot be removed by boiling.
- Is usually removed by BASE EXCHANGE —that is, by converting these salts into sodium salts which are soluble and do not cause hardness.

For washing purposes the hardness can be removed by adding washing soda (sodium carbonate) which precipitates the calcium and magnesium as carbonates.

Incidentally, the marvellous stalactites and stalagmites in underground caverns at Cheddar and other places are caused by the precipitation of carbonates similar to the fur in your kettle.

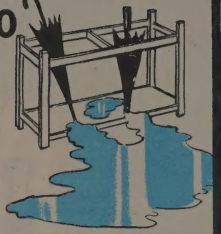
HOUSEHOLD WATER SOFTENERS



Contain zeolites which are double salts of sodium and aluminium. As the water passes through the softener, the calcium, magnesium sulphates and carbonates are changed into sodium sulphate. The process is reversible and the zeolites can be regenerated at regular intervals by passing a solution of common salt (sodium chloride) through the softener. The excess calcium and magnesium chloride is then removed by running clear water through for a few minutes.

CHAPTER TWO

Water in Your Home



The water passes along mains below the street and a service pipe takes it into each house.

Small notices like this by the side of the road indicate the position of fire hydrants connected to the main and used for emergency fire fighting.

A STOP TAP OR STOP COCK

is usually found outside the house, under a small cover (sometimes one tap serves two or more houses). This tap enables the water to be turned off if there is a burst pipe.

FIRE HYDRANT COVER

HOUSEHOLDER'S STOP COCK

SERVICE PIPE

WATER AUTHORITY'S STOP COCK

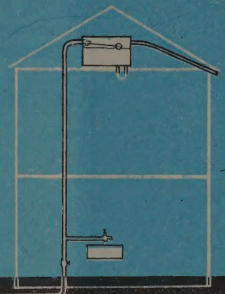
(FERRULE STOP COCK)

STREET MAIN

An additional stop tap is often provided—in older houses, usually under a small cover or in the cellar, but in modern houses often under the sink.

KNOW WHERE YOUR STOP TAPS ARE

AND SEE THAT THEY WORK!

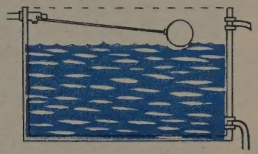


From the COLD WATER CISTERN the water passes to

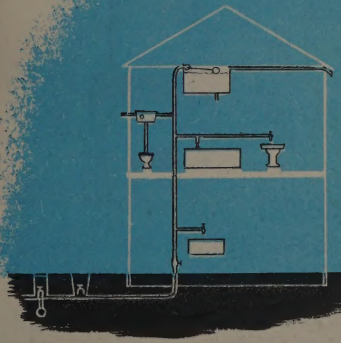
Hot water cylinder

Cold water taps } in some
W.C. cistern } instances.

The cistern is automatically kept full by the operation of a ball valve which cuts off the supply, see Chapter 3.



In most districts in Southern England the main supply passes direct to a large cold water storage cistern at the top of the house. This cistern acts as a reserve in case the pressure drops at any time. One tap is usually taken off the service pipe for drinking purposes.

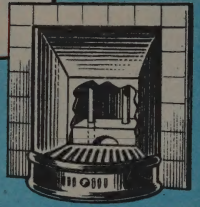


In some other districts all cold water taps are fed direct from the service pipe.

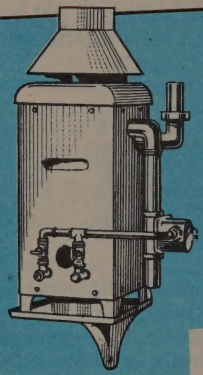
Water is forced out of the tap by pressure. This is provided by having a "head" of water above the tap—that is, a difference in water level between the source of supply and the tap.

If the tap is connected to the supply pipe from the cistern, the "head" is the height of the water level in the cistern above the tap. This is the reason why the cold water cistern is the highest water level in the house.

FIRE-BACK BOILER

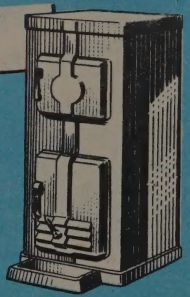


GAS CIRCULATOR



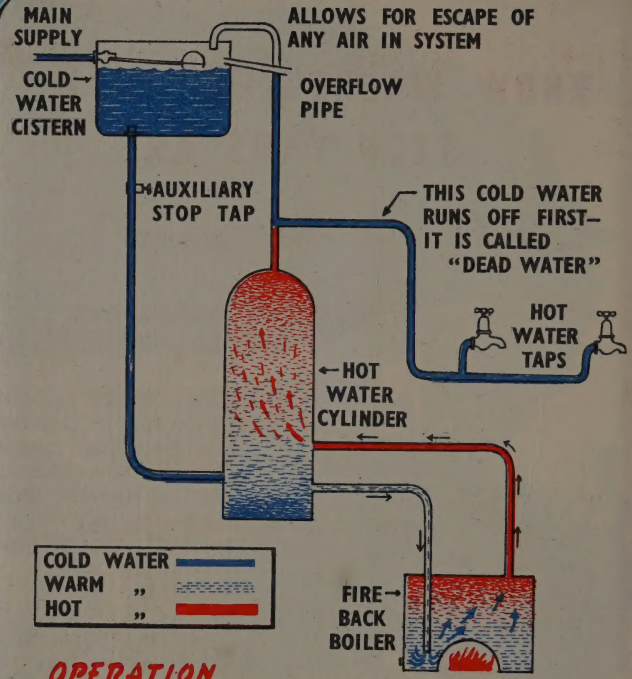
The purpose of a **HOT WATER SYSTEM** is to provide a constant supply of hot water in sufficient quantity for baths, washing, etc. This is normally done by heating the water and storing it in a cylinder from which it can be drawn off as required. The water may be heated in a fire-back boiler, gas circulator, or domestic boiler.

DOMESTIC BOILER



The system is based on two facts:

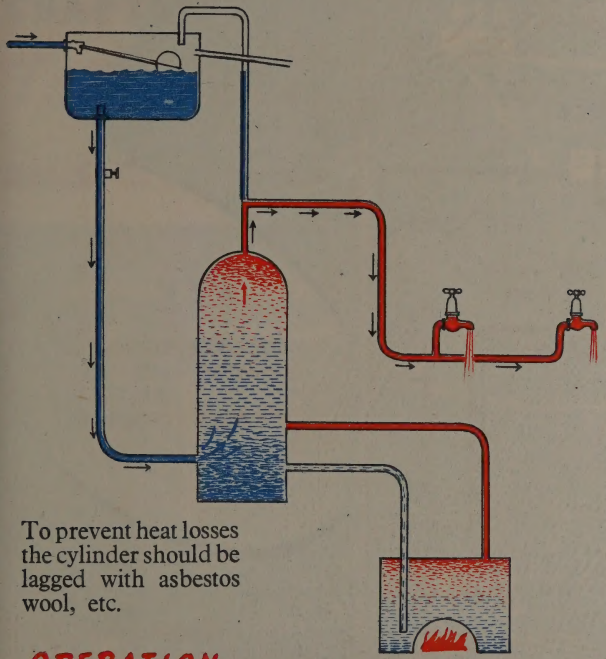
- Hot water is lighter than cold, and tends to rise to the highest point in the system—this causes circulation and allows all the water to be heated in turn.
- Water is a poor conductor of heat, so that layers of hot and luke-warm water can be stored together without mixing.



OPERATION

HOT TAPS CLOSED

Heated water from the boiler gradually rises through the flow pipe to the top of the hot water cylinder. Colder water from the base of the cylinder falls through the return pipe to the lower part of the boiler where it is heated and rises again.

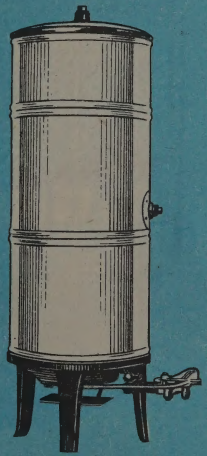


To prevent heat losses the cylinder should be lagged with asbestos wool, etc.

OPERATION

HOT TAPS OPEN

Cold water from the cistern flows into the bottom of the cylinder and forces the hot water from the top of the cylinder out of the tap. The ball valve then allows water from the service pipe to flow into the cistern.



In some cases the water may be heated by:

ELECTRIC IMMERSION HEATER placed directly in the cylinder. This can be used as an auxiliary to the other form of heating, for a supply in summer.

Both these can be thermostatically controlled so that the heating arrangement is cut off when the water reaches a certain temperature.

INSTANTANEOUS HOT WATER HEATER will supply small quantities of hot water—no storage necessary. Water passes direct from the service pipe through a coiled pipe heated by gas or electricity, which is turned on automatically by the water-tap.

GAS STORAGE HEATER consisting of a special lagged cylinder heated by a ring of gas jets.

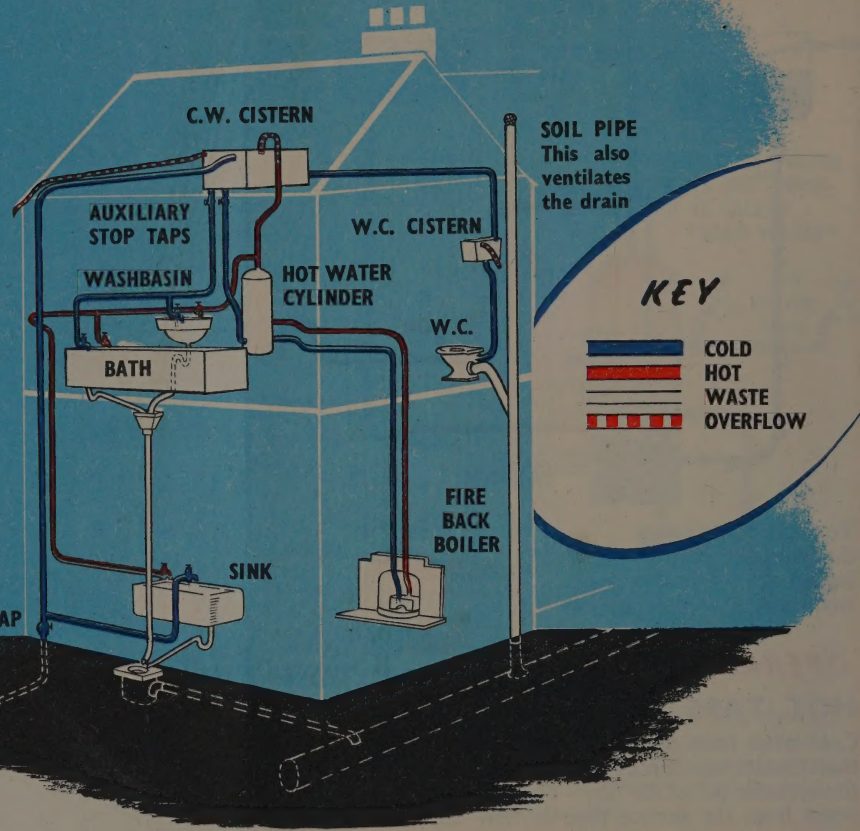
HERE IS THE COMPLETE SYSTEM SHOWN DIAGRAMMATICALLY

System shows :

Hot feed and cold supply—in this case both from cistern. Waste pipes from bath, basin, and sink, lead into open gulleys.

Soil pipe is sealed direct into drain—takes waste from W.C.

Overflow pipes from cold water and W.C. cisterns pass through walls to outside.



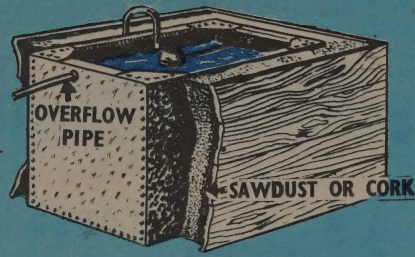
CHAPTER THREE

Taps, Valves and Cisterns

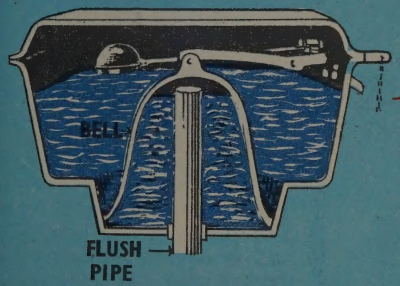
COLD WATER CISTERN

Usually made of galvanised steel, but can be made of slate, or wood, lined with sheet lead, copper, or zinc, depending on local bye-laws.

Should be fitted with a lid to keep out dirt and dust.

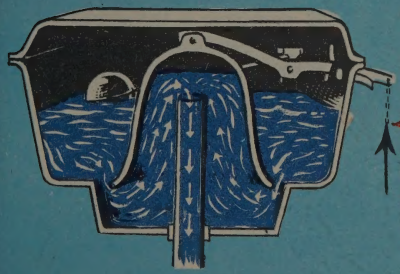


If in the roof it should be lagged to prevent freezing.



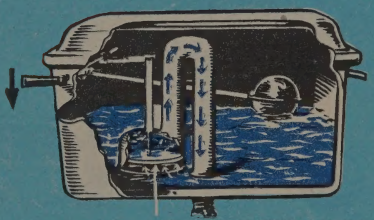
FLUSHING CISTERNS

Sometimes called W.W.P.'s (water waste preventers). Must hold 2 gallons (up to 3 gallons in some districts) and discharge this amount in 5 seconds.



ACTION OF SYPHONIC FLUSHING CISTERN *(Burlington type).*

When the chain is released the bell lifts water over the end of the flush pipe. This water, falling down the pipe, drives out the air and forms a syphon which continues to function until the cistern is empty. At the same time the ball falls, opens the valve, and allows the cistern to fill again.



PISTON WHEN LIFTED FORCES WATER OVER TOP OF FLUSH PIPE

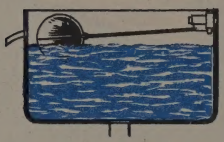
MODERN TYPE

Can be operated by a lever or push button (for low down W.C. suite) or by chain.

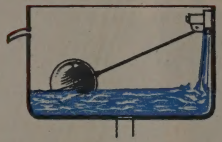
CISTERN OPERATION

The water in the COLD WATER and W.C. CISTERNS is brought back to a constant level by a BALL VALVE operated by a floating ball.

PORTSMOUTH TYPE



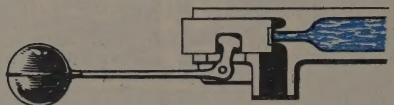
CLOSED

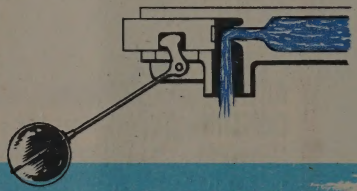


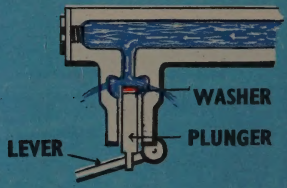
OPEN

As the cistern fills, the ball rises and the small arm of the lever moves the piston and presses the washer against its seating, so shutting off the flow of water.

As the cistern empties, the ball falls and the small arm moves the piston outwards away from the seating, so allowing water to flow into the cistern.







CROYDON TYPE

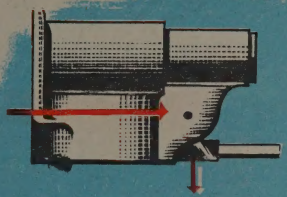
This is an alternative type The piston works verticall and is operated directly b the ball lever. Otherwise th principle is the same.

TROUBLES LIKELY TO OCCUR

If anything goes wrong, water will flow from the overflow pipe. Watch this pipe regularly.

(a) Faulty washer.
(b) Pivot pin or piston seized up.
(c) Perforated ball.

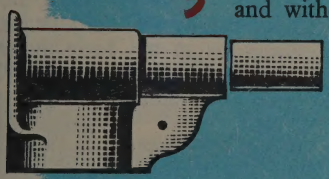
REMEDY FOR FAULTY WASHER



1 Turn off the main supply and partly empty the cistern to allow room to work.

2 Remove the pivot pin with pliers.

3 Pull down the ball lever and withdraw it.



4 Pull out the piston.

5 Place a screwdriver in the piston slot and unscrew the piston cap with pliers.

6 Remove the old washer, fit a new one and screw the piston and cap together again.

7 Place the piston in the hole, washer first and slot downwards.

8 Insert the lever to engage the piston slot, and replace the split pin.

9 Turn on the water and check correct working.

REMEDY FOR PERFORATED BALL

An indication of this trouble is that the ball sinks to the bottom of the cistern and is full of water.

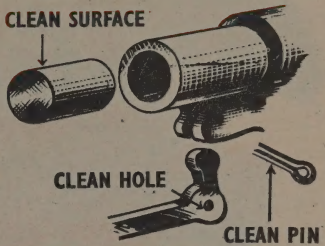
- Unscrew the ball from the lever.
- Tie up the lever temporarily to close the valve.
- Fit a new ball of the correct size.

The water level should be about 1" below the overflow pipe and can be adjusted slightly by bending the lever.

REMEDY FOR PIVOT PIN OR PISTON SEIZED UP

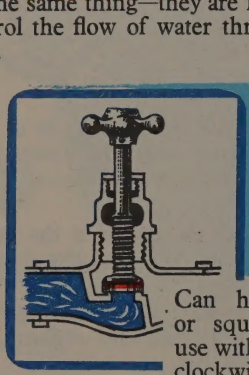
Remove and clean the pivot pin and piston.

Fit a new pin if the existing one is corroded.

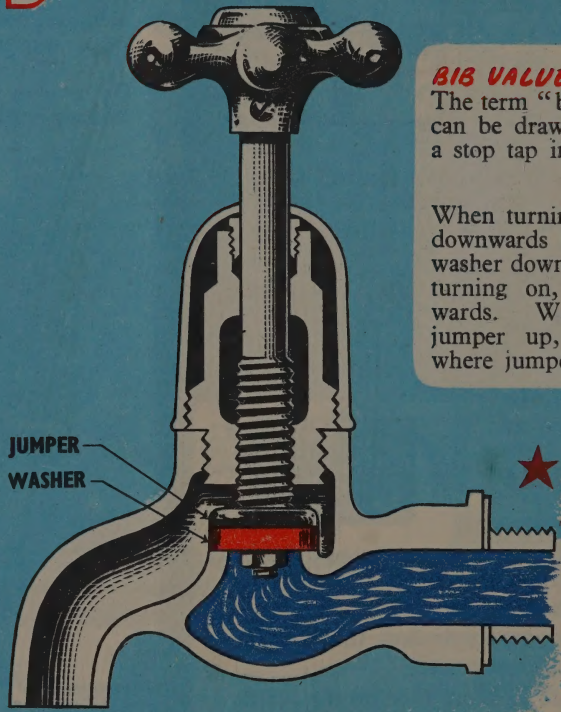


TAPS - HOW THEY WORK

STOP TAP, STOP COCK, STOP VALVE are different names for the same thing—they are fitted to control the flow of water through a pipe.



Can have handle, or square end for use with key. Turn clockwise to close.



BIB VALVE is an ordinary **TAP** The term "bib" means that wate can be drawn off. It is just lik a stop tap internally.

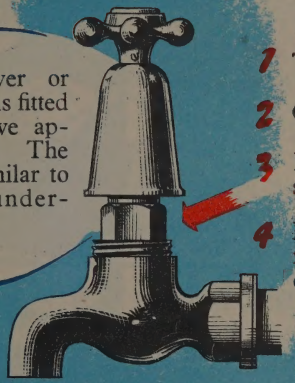
When turning off, spindle rotate downwards in tap body, pressin washer down on to seating. Whe turning on, spindle rotates up wards. Water pressure force jumper up, except in hot tap where jumper is fixed to spindle

★ **IF THE TAP DRIPS WHEN TURNED OFF**

or emits hammering or humming noises when partly turned on

FIT A NEW WASHER

HOW TO RE-WASHER A TAP



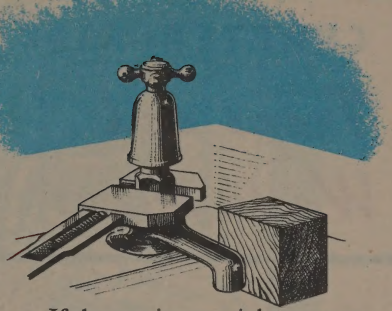
This cover or "dome" is fitted to improve appearance. The tap is similar to others underneath.

1 Turn off the stop tap

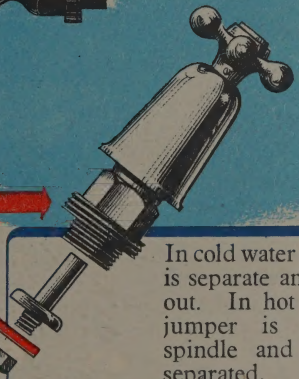
2 Open tap fully until the water is run off

3 If the tap is fitted with a dome, unscrew it to expose this nut.

4 Hold the tap firmly and unscrew the nut with a spanner—usually anti-clockwise.



If the nut is very tight support the tap by wedging it with a piece of wood, to take the strain off the pipe, then jar the spanner with hand or mallet. This should be done gently to avoid breaking the basin.



5 Remove the head of the tap.

6 Unscrew this nut and remove the old washer.

In cold water taps the jumper is separate and can be lifted out. In hot water taps the jumper is fixed in the spindle and must not be separated.

7 Fit a new washer of correct type and tighten the nut securely

HOT WATER—
rubber composition

COLD WATER—
composition or leather

8 Replace "jumper" and head of tap and tighten with the spanner. Screw down the cover.

9 Turn the tap off, and the water on and check that it works properly.

CHAPTER FOUR

Traps and Waste Pipes

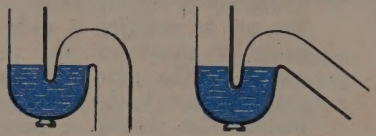
The **SANITARY APPLIANCES** in your home will probably include

- **SINK**
- **LAVATORY BASIN**

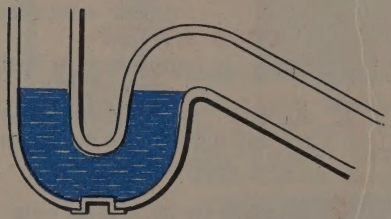
Normally of glazed fireclay which may crack with rough use.

- **W.C.**
- **BATH**

Normally cast-iron with enamel glaze which is liable to chip off if knocked, or discolour from neglect or constantly dripping water.



TRAPS vary in design, but each has a water seal to prevent foul gases rising from the drain and passing into the house.



Typical trap for sink or lavatory basin.

TROUBLE

SIGN

Water remains in sink

CAUSE

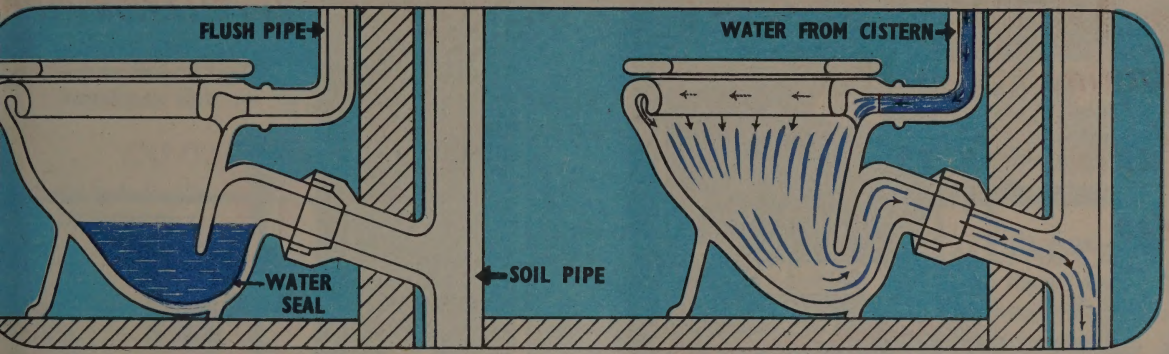
Chilled grease, hair, solids, etc., blocking bend.

REMEDY

Place a force pump over the sink outlet. Press down firmly and pull up sharply. Repeat several times.

If this fails, place a bucket under the trap. Remove the cleaning eye and insert a pliable wire spiral up both sides of trap to remove the obstruction.

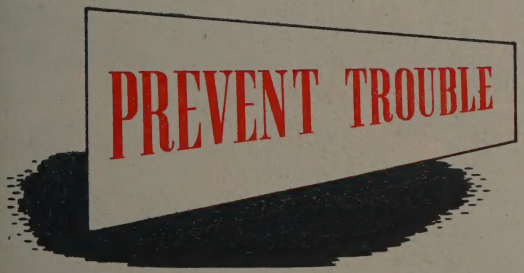
WARNING — Do not attempt to clean the trap by pushing a wire *down* the sink.



The modern W.C. appliance is usually of the "Washdown" type.

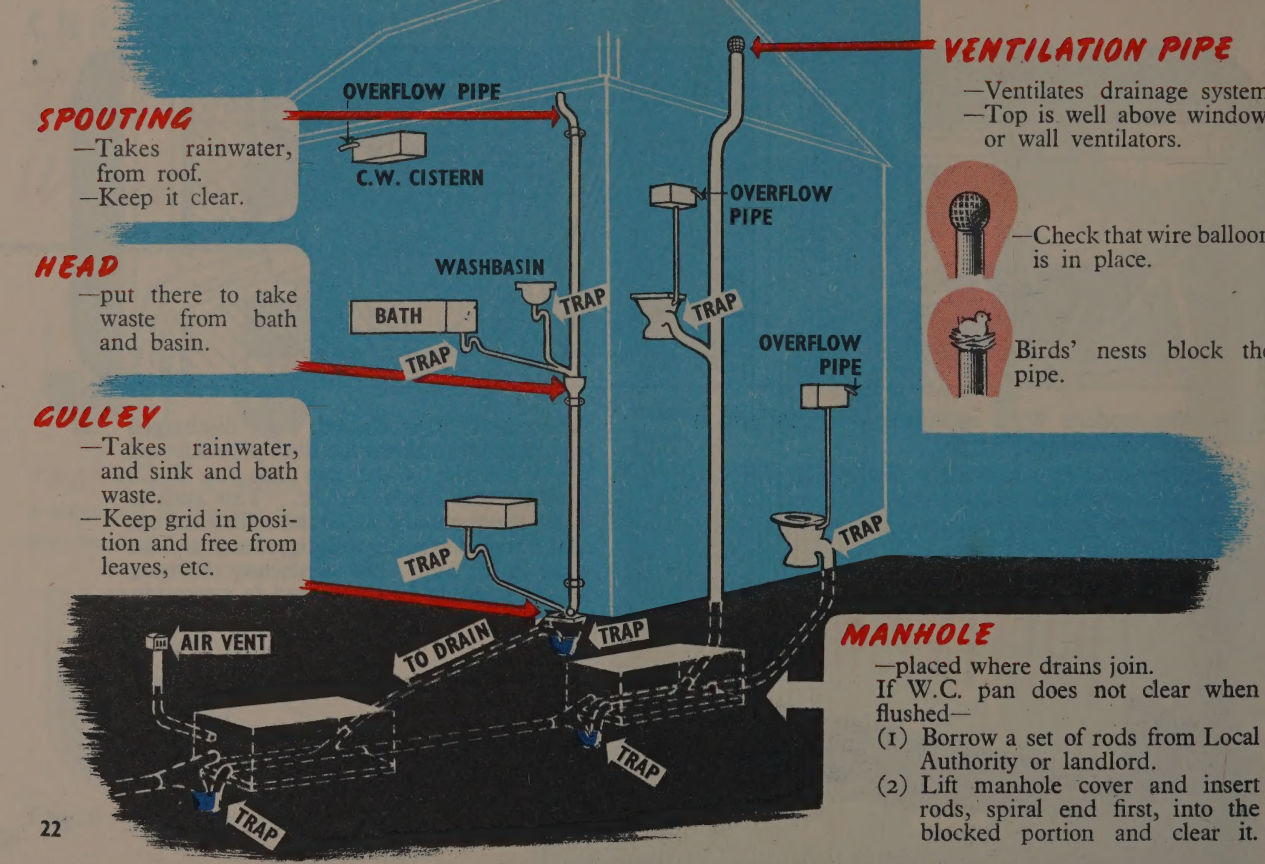
The outlet is connected with the soil pipe outside the house and a U-shaped trap formed in the fitting holds water and provides a seal.

When the W.C. is flushed, water discharged from the cistern down the flush pipe is forced round the rim of the pan into the W.C., cleansing the whole surface. This rush of water also forces the water and solid waste out of the trap down the soil pipe, leaving clean water in the trap. For satisfactory cleansing 2 gallons should be discharged in 5 seconds.



Keep the pan and trap clean with special stiff brush and cleanser.

Old cloths, newspapers, brush heads, potato peelings, etc., will block the drain.



SPOUTING

—Takes rainwater, from roof.
—Keep it clear.

HEAD

—put there to take waste from bath and basin.

GULLEY

—Takes rainwater, and sink and bath waste.
—Keep grid in position and free from leaves, etc.

VENTILATION PIPE

—Ventilates drainage system
—Top is well above window or wall ventilators.

—Check that wire balloon is in place.

Birds' nests block the pipe.

MANHOLE

—placed where drains join.
If W.C. pan does not clear when flushed—

(1) Borrow a set of rods from Local Authority or landlord.
(2) Lift manhole cover and insert rods, spiral end first, into the blocked portion and clear it.

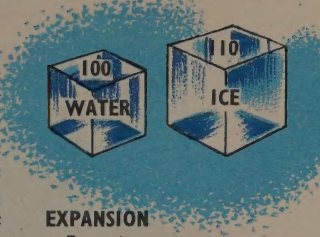
CHAPTER FIVE

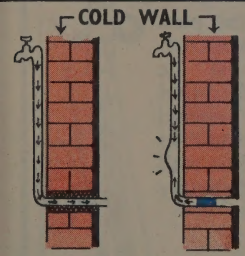
When winter comes

WHY PIPES BURST

When water freezes it expands and increases in volume by one-tenth.

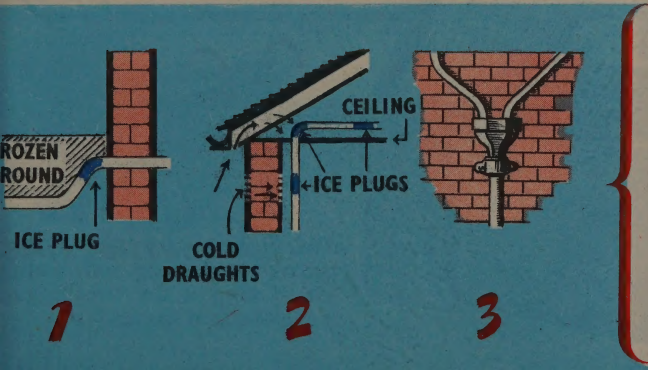
If this expansion cannot take place along the pipe, due to the existence of an ice plug, it takes place across it and the pipe bulges and may split.





If there is no ice plug formation, a pipe can freeze from its closed end, towards the main, without damage—expansion takes place ALONG the pipe.

An ice plug may form in the cold wall. If this happens, expansion must take place across the pipe, causing it to bulge and burst. Bursts are most likely to occur between the closed end of the pipe and the ice plug.

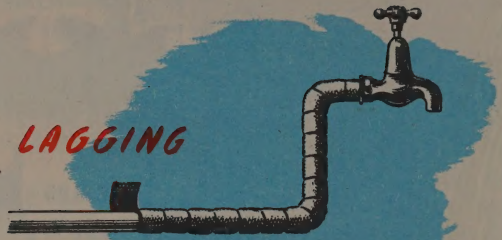


To prevent bursts you must, therefore, prevent the formation of ice plugs. These are likely to form:—

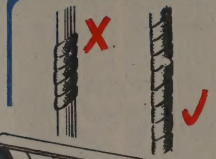
1. Where a pipe enters the house too near the surface. (Pipes should be at least 2 ft. 6 in. below ground level.)
2. Where pipes are exposed to draughts:
   - —under ground floor
   - —near air grates
   - —near eaves
   - —in roof space.
3. In pipes fixed to outside walls:
   - —outside W.C's
   - —waste pipes (these often freeze up if water constantly drips through them).

HOW TO PREVENT

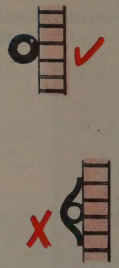
LAGGING



All pipes liable to freeze should be lagged, that is, wrapped with rag, or sacking, to keep out cold draughts.

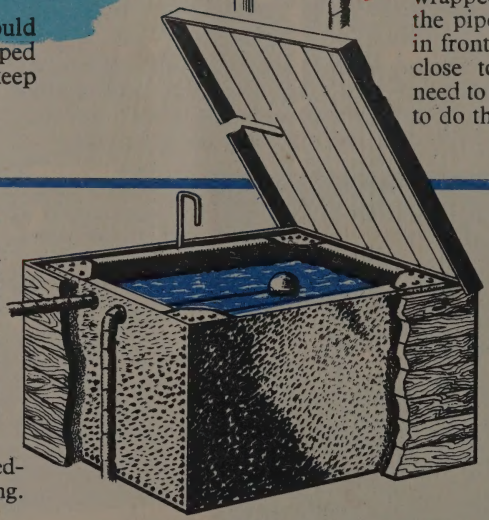


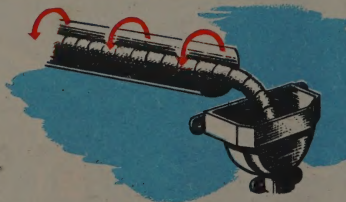
All places along the pipe must be equally protected. The lagging must be wrapped completely round the pipe, not just fastened in front. If the pipe runs close to the wall it will need to be lifted off slightly to do this.



If the **COLD WATER CISTERN** is in the roof space, protect it with a board casing packed with sawdust or slag wool — or as a temporary measure, wrap it with sacking. Always lag the feed pipe, particularly where it passes through the casing—it is more likely to freeze up than the cistern.

Note: Lid should have turned-down edges to overlap casing.



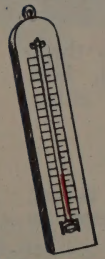


After lagging **OUTSIDE PIPES**, protect the lagging with roofing felt to keep it dry—wet lagging is useless, as it freezes too.

PIPES FREEZING

KEEP THE HOUSE WARM

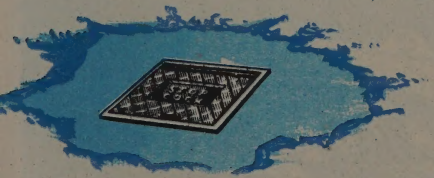
OTHER PRECAUTIONS



During a very cold spell, prevent cold draughts by keeping doors, windows, and ventilators CLOSED.

See that all taps are turned OFF to prevent water dripping down waste pipe.

Place a small lamp, or heater, near any place likely to freeze—outside W.C.'s, pipes in roof space, etc.



If the stop tap is outside, mark its position and place salt round the lid to prevent freezing.

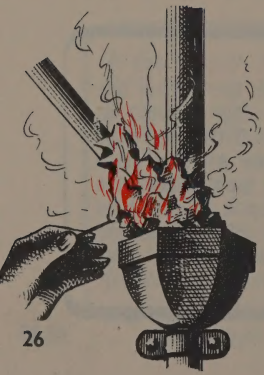
If you leave the house for more than 24 hours in winter, turn off the stop taps and drain the system—turn on all taps and flush the W.C. Place a handful of salt in the W.C. pan to prevent freezing.

If, in spite of your precautions you do get a **FREEZE-UP** take care when thawing out.

First decide which pipe is frozen, then, always starting at the open end, heat gradually along the pipe, using either

A SMALL LAMP
HOT WATER
HOT CLOTHS

But remember—1 lb. of ice needs almost all the heat from 1 lb. of boiling water to change it to water.

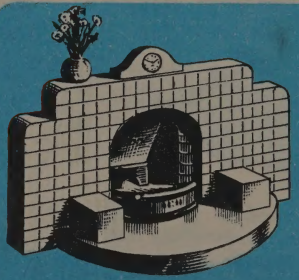


IF A SINK OR BATH WASTE PIPE FREEZES

Try salt inside.
Pour hot water down if possible.
If these fail, find where the pipe leaves the house and either

Pour hot water over cloths placed round the pipe or wrap newspapers round the pipe and set them alight.

HEAT RISES so apply it **UNDERNEATH.**



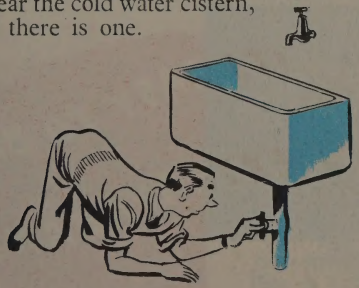
If the hot water system is frozen or burst, **DON'T LIGHT A FIRE** until you've asked the plumber if it's safe to do so.

IF YOU DO GET A BURST

KEEP CALM and DON'T PANIC

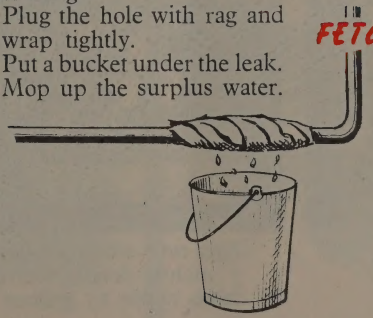
1

Turn off the main stop tap and also the auxiliary tap near the cold water cistern, if there is one.



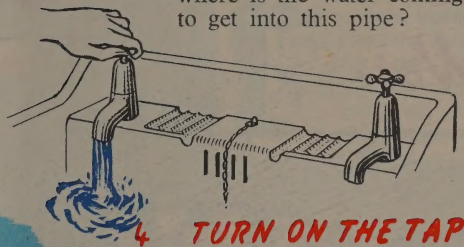
2 Prevent the water from spreading—

- Plug the hole with rag and wrap tightly.
- Put a bucket under the leak.
- Mop up the surplus water.



3 THINK

—is it in the hot or cold system?
—where is the water coming from to get into this pipe?

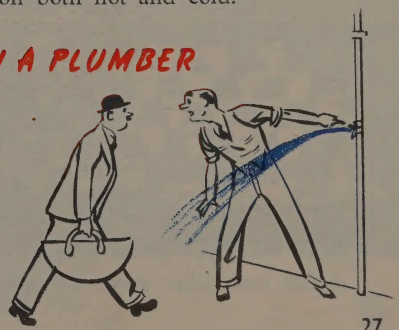


4 TURN ON THE TAPS

—Hot taps, if the burst is in the hot system.
—Cold taps, if it is in the cold system.

If you can't decide which—turn on both hot and cold.

FETCH A PLUMBER

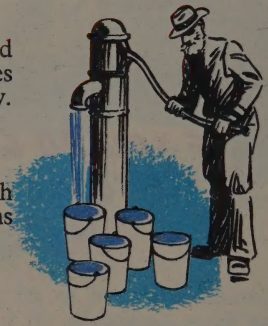


CHAPTER SIX

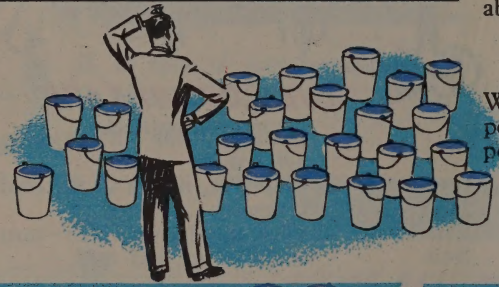
Waste Not-

DO YOU KNOW?

In country districts with no piped water supply each person uses about 5 gallons of water per day.



When water is laid on, each person uses about 25 gallons per day.



A full bath takes about 35 gallons.

And even when you have the water only 5 inches deep (war economy) it still takes about 15 gallons!

USE WATER USEFULLY

FOR WASHING

FOR DRINKING

FOR CLEANLINESS

—but don't wash your hands under a running tap, this can easily waste 2 or 3 gallons.

FOR COOKING

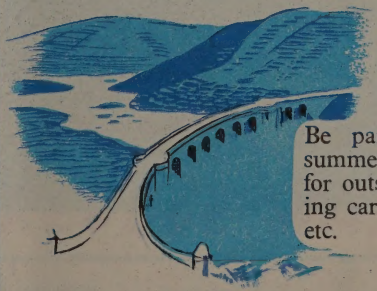
FOR CLEANING

STOP THAT DRIPPING TAP

—fit a new washer, as explained in Chapter 3.
1 drip per second = 312 gallons per year.
= $\frac{3}{4}$ cwt. coal if from the hot tap.

WATCH THAT OVERFLOW PIPE

It is only there for emergency:—if the water drips or runs out, attend to the ball valve at once, see Chapter 3.



Be particularly careful in summer in the use of water for outside purposes—washing cars, watering the lawn, etc.

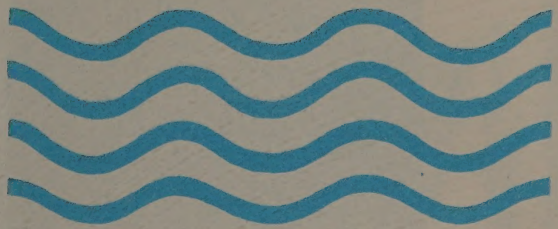
Some Facts and Figures

- The average annual rainfall for the British Isles is 44 inches.
- An " absolute drought " is 15 or more consecutive days, each having less than .005 inches of rain.
- A " wet spell " is 15 or more wet days having .04 inches or more of rain.
- One inch of rain on a plot of land 10 feet square yields 52 gallons.
- One pint of water weights $1\frac{1}{4}$ lbs. and occupies 34.683 cubic inches or .586 litres.
- A cubic foot of ice weighs 58 lbs.
- A cubic foot of water weighs 62.35 lbs.
- The relative efficiency of the following material for pipe coverings to conserve heat is :—

Asbestos $1\frac{3}{4}$ inches thick	...	65% saving.
Hairfelt Wool $\frac{3}{4}$ inches thick	...	70% saving.
Mineral Wool $1\frac{1}{2}$ inches thick	...	78% saving.
Granulated Cork $1\frac{1}{2}$ inches thick	...	80% saving.

Less Waste - More Exports

Bringing water to your house means the use of materials urgently needed for the export drive — coal, steel, iron, lead, and chemicals of all kinds, as well as electricity and oil. In addition, capital expenditure has been cut. This means that new waterworks — dams, pumping stations, filter beds and purification plant — will inevitably be delayed, resulting in extra strain on existing resources.



You can help the industry and the country by

SAVING WATER NOW

— REDUCE WASTE

Water Supply

The British Waterworks Association, through its Public Relations Department, assists the water authorities in distributing information about water supplies to the general public. All the material is aimed at explaining the essential service which a water authority performs.

A tap is generally the only immediately visible part of the work done in bringing water to your house in unlimited quantity. Behind that tap is a long and complicated story of absorbing interest. The collection, storage, purification and delivery of water involves probably the most intensive and extensive engineering feat in the country and an enormous capital outlay.

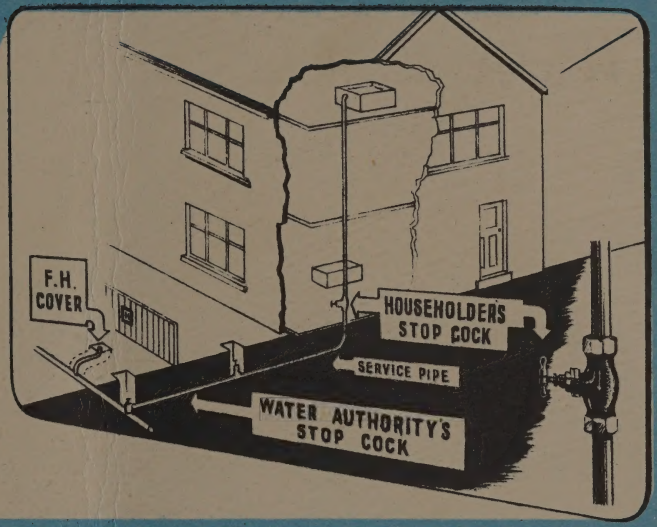
The Association has recently completed a sound film, " Waterworks," which tells this story from the fall of rain to the emergence of pure water from the tap. This film, available in 16 mm. or 35 mm. versions, illustrates the story of water supply in all its phases with a non-technical commentary and a wealth of concise photography.

Other material available includes film strips, lantern slides, lecture notes, exhibitions which are adaptable to local requirements, exhibition panels, posters, leaflets, a pamphlet for use in schools, and other publications, of which this booklet is one.

Enquiries about these, requests for information, etc., should be addressed to the Association at 34, Park Street, London, W.1, and to the local water undertaking, which may already have material for use.

The facts and information given in this Booklet are fully amplified on filmstrips with accompanying lecturer's notes.

A filmstrip consists of a series of photographs and diagrams in sequence on a short length of 35 mm. film. It is ready for projection and takes up very little space.



The HANNA filmstrip projector is very compact and simple to use. Weight 7 lb. Will project 35 mm. filmstrip or 2 x 2 in. slides. Operated from mains or 12-volt battery. Full details from

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